

# One Good Target

With Some Other Sights Worth Seeing  
While You're in the Neighborhood

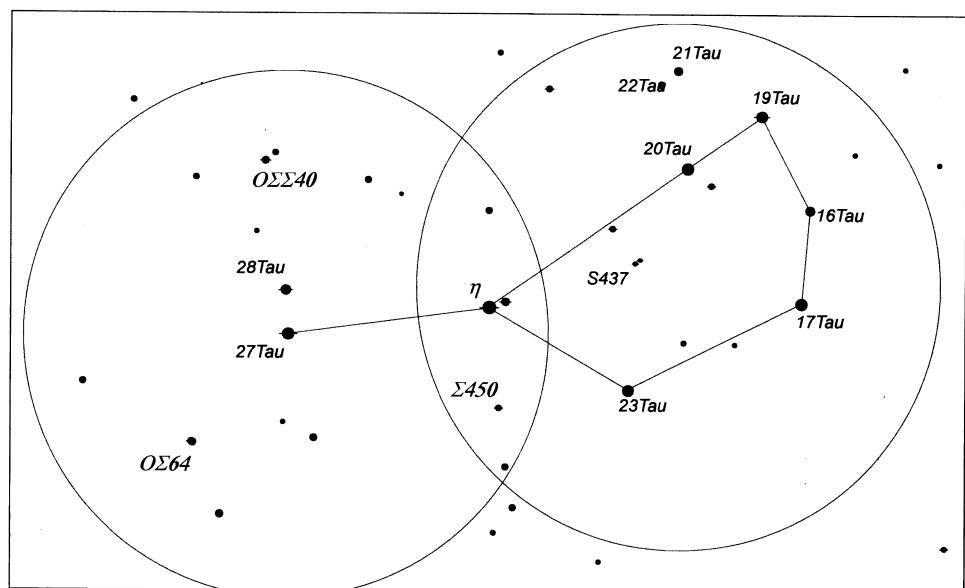
December

## A Closer Look at The Pleiades (M45)

For many observers, The Pleiades are the most beautiful target in the entire sky. Not only are they stunningly attractive – Alfred, Lord Tennyson compared them to “a swarm of fire-flies tangled in a silver braid” – but the entire group fits nicely within the field of view of binoculars or a wide-field eyepiece, making them an easy catch for even the newest beginner. As a result, many visual observers are understandably enchanted by the group portrait, but don’t follow up with a closer look at some of the cluster’s members by themselves – despite the fact that many of the cluster’s less frequently visited features can be examined without increasing the magnification much beyond what’s used to observe the cluster as a whole. It takes the old saw about not seeing the forest for the trees and turns it inside out, seeing only the forest and not noticing what’s impressive about its trees taken individually. This month, we’ll try to remedy that bit of neglect.

The first thing you’ll need to overcome in order to look more closely at The Pleiades is the inevitable confusion that occurs when you look at a familiar scene from a new perspective. To examine the cluster’s stars individually, you’ll need at least a little more magnification, so you won’t be able to keep the entire group in the eyepiece, and you’ll have to figure out which star is which in this new arrangement – no easy task when there are so many of them, and they’re all bright, blue-white, and sparkly. To keep it fairly simple, I use the two  $1^\circ$  fields shown below as my jumping-off points, which at least keeps the bowl of the dipper intact – but you might be surprised at how hard you sometimes have to concentrate in order to match the chart to what you see in the eyepiece.

**The Pleiades:**  
 **$1^\circ$  fields (unreversed)**  
**Stars to mag 8.5**  
**North at top**



Once you have things sorted out, start off with a couple wide multiples that can be split at very low power – even in binoculars, if you want. The first is **Alcyone** (Eta [η] Tauri), the brightest Pleiad, marking the point where the dipper's handle joins the bowl. Like almost all members of the Pleiades cluster, Alcyone's primary is a bright, hot Be type star: a blue giant shining at mag 2.9, it can look greenish-yellow in the telescope. Two arcminutes SSE of the primary, the system's B-C-D components – mag 6.3, 8.2 and 8.7 – form a compact 1½ arcminute triangle. The system makes a nice view over a wide range of magnifications. Try anything from 20x to 75x.

The next wide double is **Taygeta** (19 Tauri), which sits at the lip of the dipper and pairs a bright mag 4.3 primary with a mag 8.1 companion 72 arcseconds away. Most observers describe them as yellow-white and blue-violet. Like Alcyone, they should split readily at low power – try 30x.

If you're using binoculars, look just NE of Taygeta for a 2.5 arcminute pairing of mag 5.8 and 6.4 blue dwarf stars, **Asterope I and II** (21 and 22 Tau). Also check the even wider duo at the far end of the dipper's handle, **Atlas** and **Pleione** (27 and 28 Tau), the father and mother of the seven sisters. They shine at mag 3.6 and 4.8, with a 5 arcminute space between them.

Inside the dipper is another wide multiple, **South 437**, consisting of a very close (1.1 arcsecond) blue-white mag 8.1 pair mated with a mag 7.7 orange giant 39 arcseconds away – a defiant little red spark surrounded by a sea of brighter blue stars. It's an inspiring view at 30x or more. Just east of the dipper is **Struve (Σ) 450**, a white and gray pair comprising a mag 7.3 primary and a mag 9.4 companion separated by 6 arcseconds. This one you won't be able to split in binoculars – it'll take at least 150x, and maybe as much as 200x for a clean split.

Moving farther east, into the other 1° field, we find **OΣ64**, from the multiple star catalog compiled by Otto Struve. It's a linear triple pairing a mag 6.8 white star with two relatively dim companions, a mag 10.2 star just over 3 arcseconds away and a mag 10.5 star 7 arcseconds farther along the same line. You'll need high power – use 200x or more – to split the closer pair and see all three points on the line. Near the north end of the eastern 1° field, **OΣΣ 40** (from the Supplement to Otto Struve's catalog) is a wide white or bluish-white pair suitable for binoculars, with a mag 6.6 primary and a mag 7.5 companion separated by 87 arcseconds.

The Pleiades cluster is currently moving through a cloud of dust and gas unrelated to the molecular cloud from which its stars formed. Starlight reflecting off this dust and gas creates faint reflection nebulas, seen throughout the Pleiades on long-exposure photos but difficult to detect visually. Since these are reflection nebulas rather than emission nebulas, narrowband filters won't help, but averted vision might. The brightest of these is **Tempel's Nebula (NGC 1435)**, a reflection nebula 30 arcminutes wide covering **Merope** (23 Tau). Under dark skies with good transparency, it can be spotted in scopes as small as 3" to 6" at low power (25x to 100x) – Wilhelm Tempel discovered it in 1845 using a 4" refractor at 45x, and some observers have even seen it in binoculars – but no matter what instrument you use, the nebula is subtle and elusive: Tempel described it as resembling "breath on a mirror." You'll have to keep Merope out of the field to have any chance of catching it, the slightest moonlight will wash it away, and it's awfully easy to think you've seen the nebula when it was only fog on your eyepiece or a hazy sky. To make sure it was the nebula, look for its fanlike shape and a subtle streaky appearance, since fog and haze are more likely to be relatively uniform across their extent. Alternatively, follow up a sighting of the nebula with a look at **the Hyades**, or find **Ally's Braid**, the lovely trail of stars leading south from Alcyone, and compare the sky on the Merope side of the braid to that on the other side. If you see nebulosity across the Hyades or on the far side of Ally's Braid, then what you saw around Merope was likely fog or haze, not the nebula – and that moment of truth seems a fitting place to conclude our deep dive into The Pleiades.